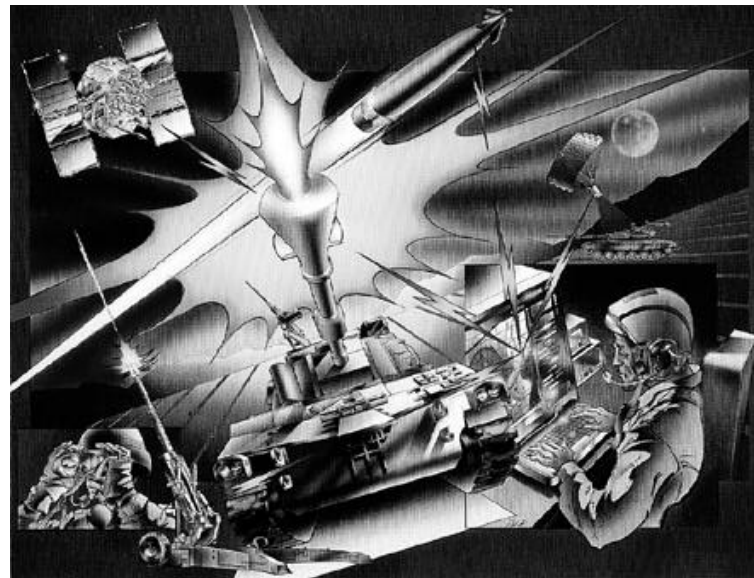




**US ARMY
TANK-AUTOMOTIVE AND ARMAMENTS
COMMAND
ARMAMENT RESEARCH, DEVELOPMENT AND
ENGINEERING CENTER
(TACOM-ARDEC)**

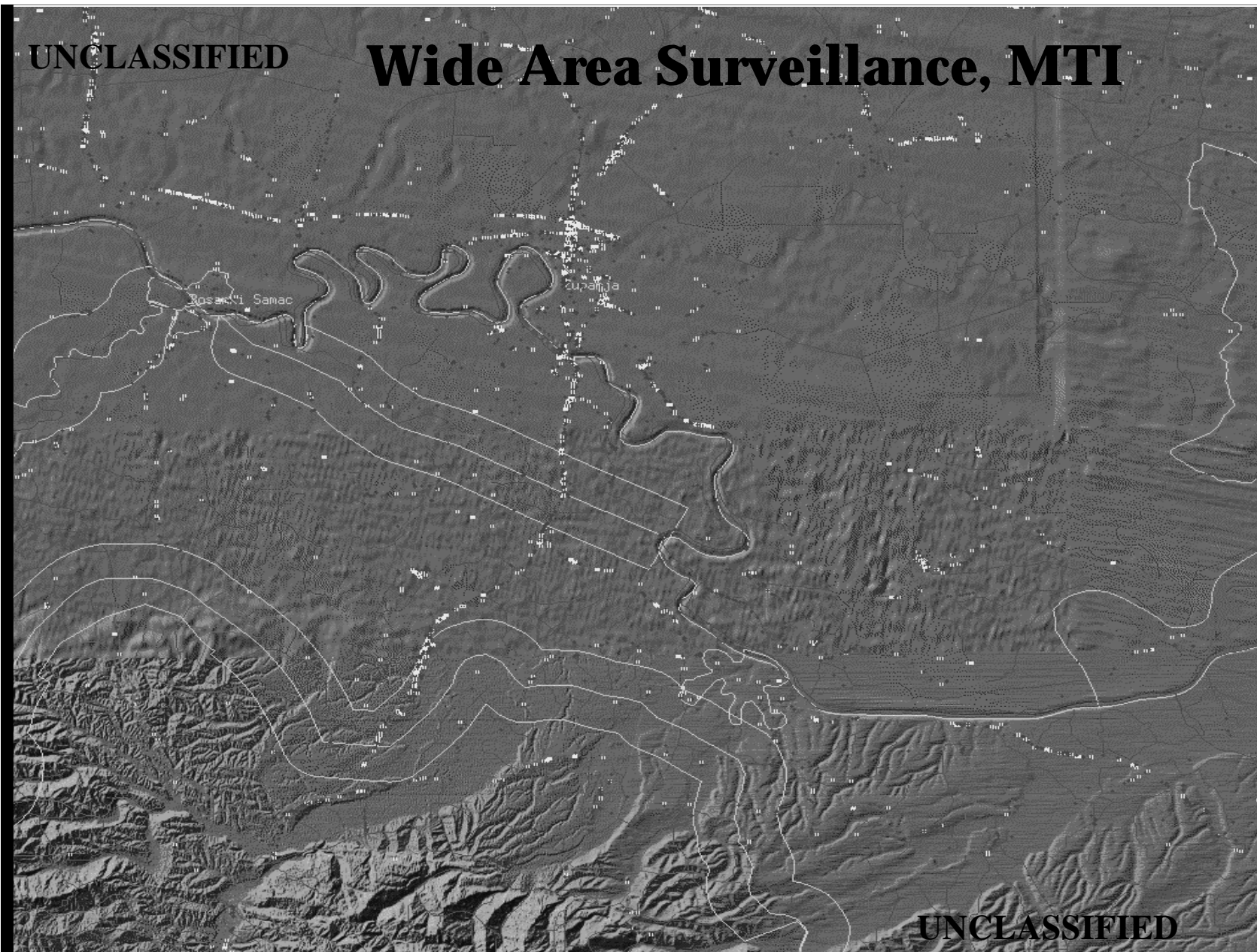


**Presented by
BG Mike Lenaers**

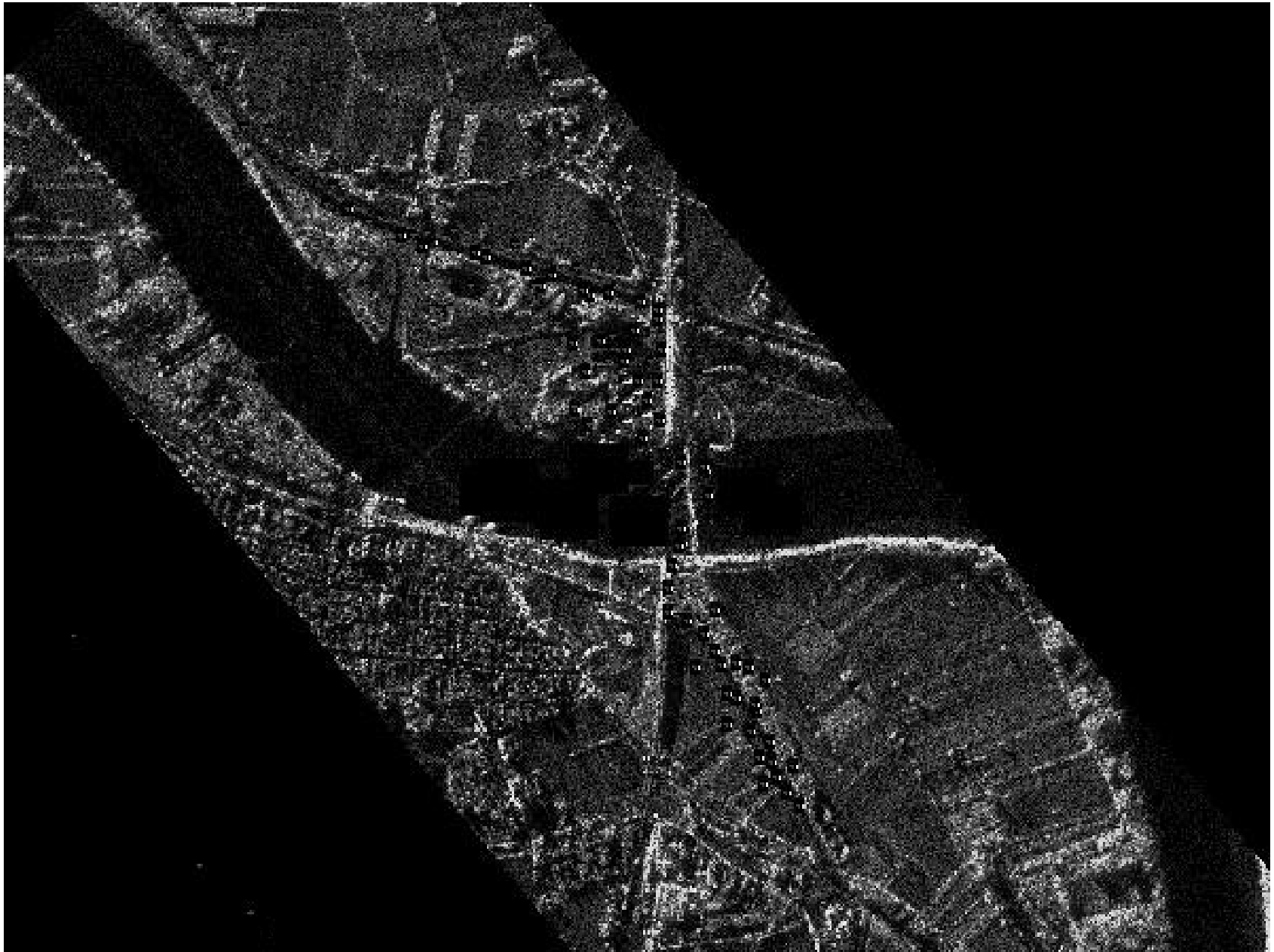


UNCLASSIFIED

Wide Area Surveillance, MTI



UNCLASSIFIED





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SENSOR FUSED WEAPON



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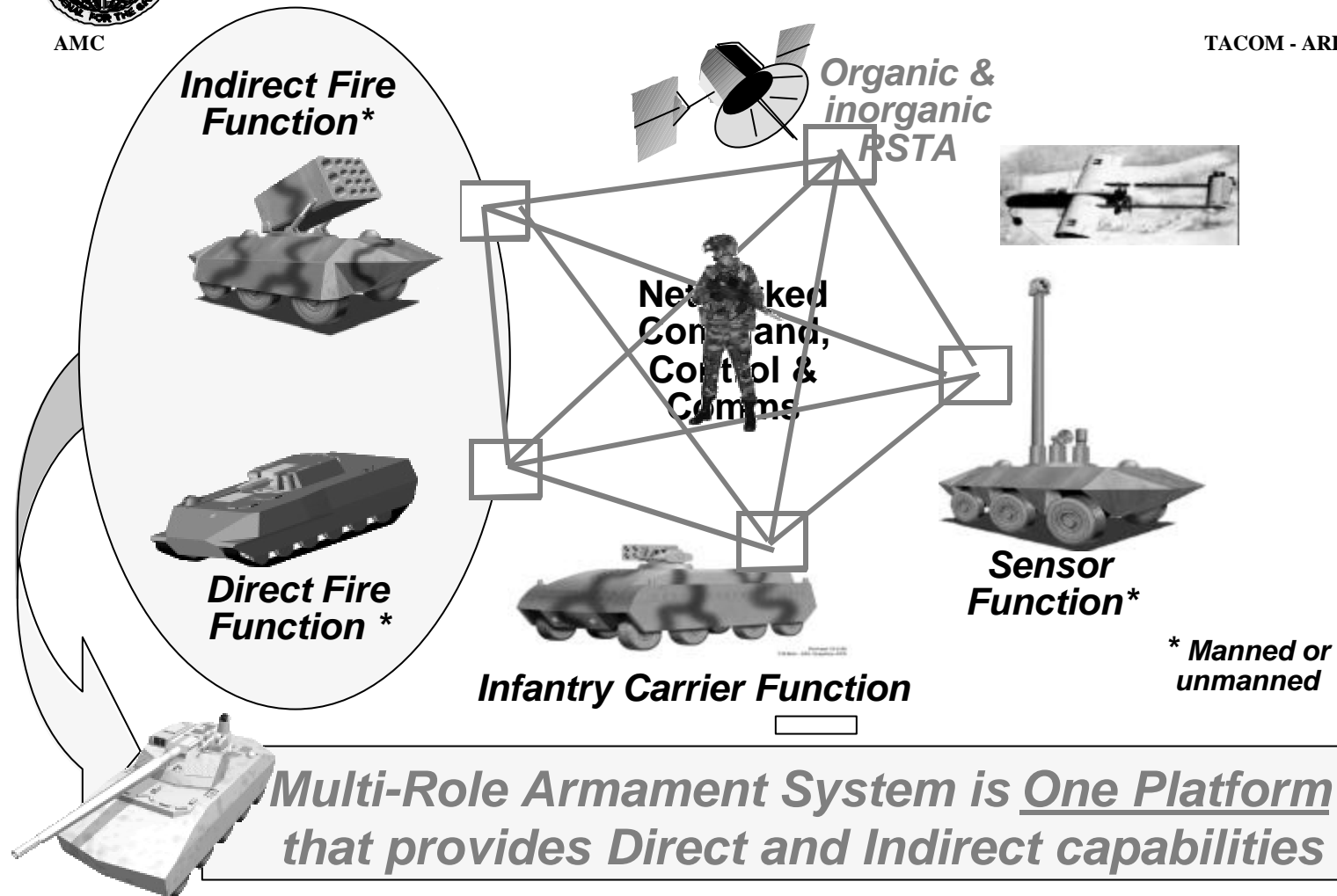


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Future Combat Systems Of Systems



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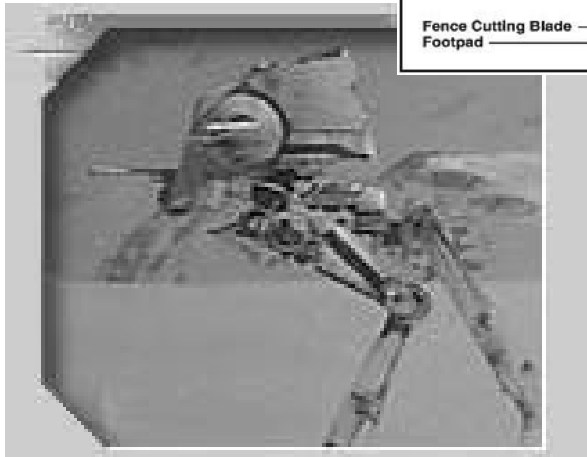
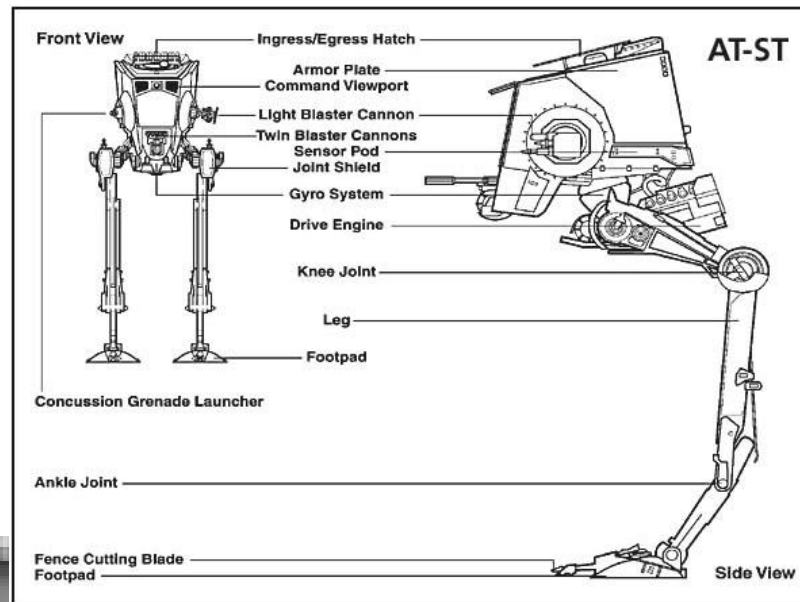


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NOT THE FCS PROTOTYPE



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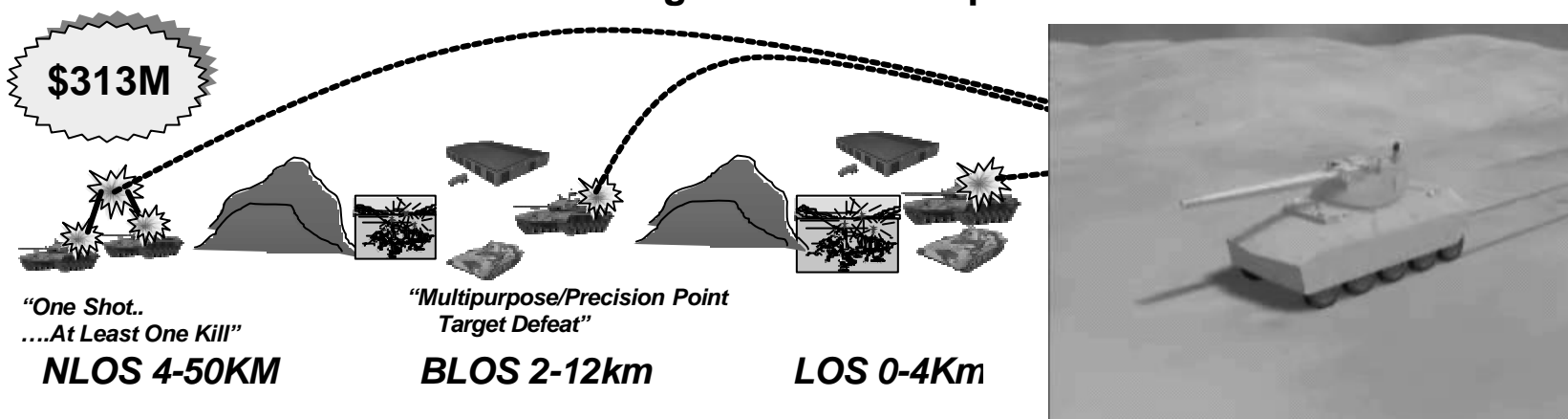




FCS Multi-Role Armament & Ammunition ATD



Objective: Demonstrate an integrated multi-role armament system providing lethality overmatch capability in the expanded "Red Zone" Close Fight and Tactical Deep Fight, enabling the Objective Force to dominate maneuver throughout the Full Spectrum of Conflict



Pacing Technologies:

Cannon -

- Electrothermal-Chemical propulsion
- Recoil mitigation

Munition -

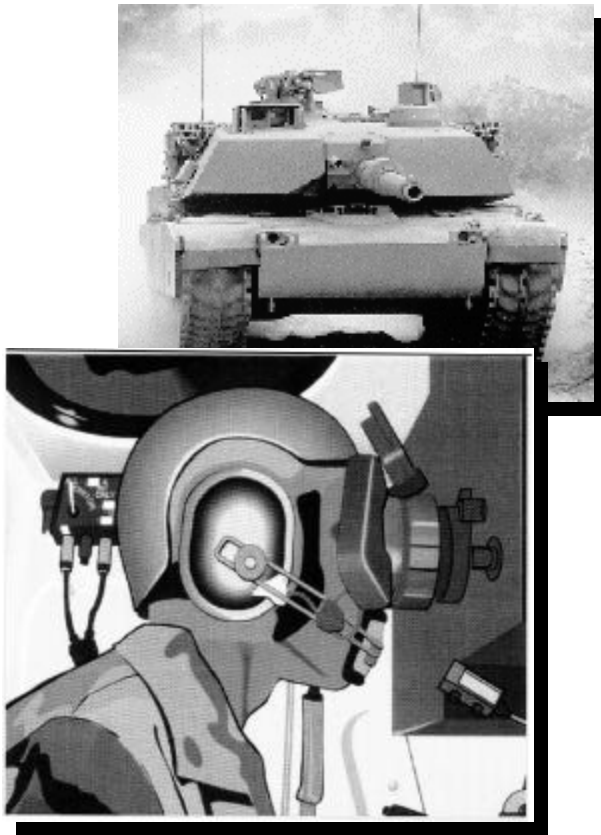
- Seeker/G&C
- Multi-Mode Warhead

Warfighter Payoffs:

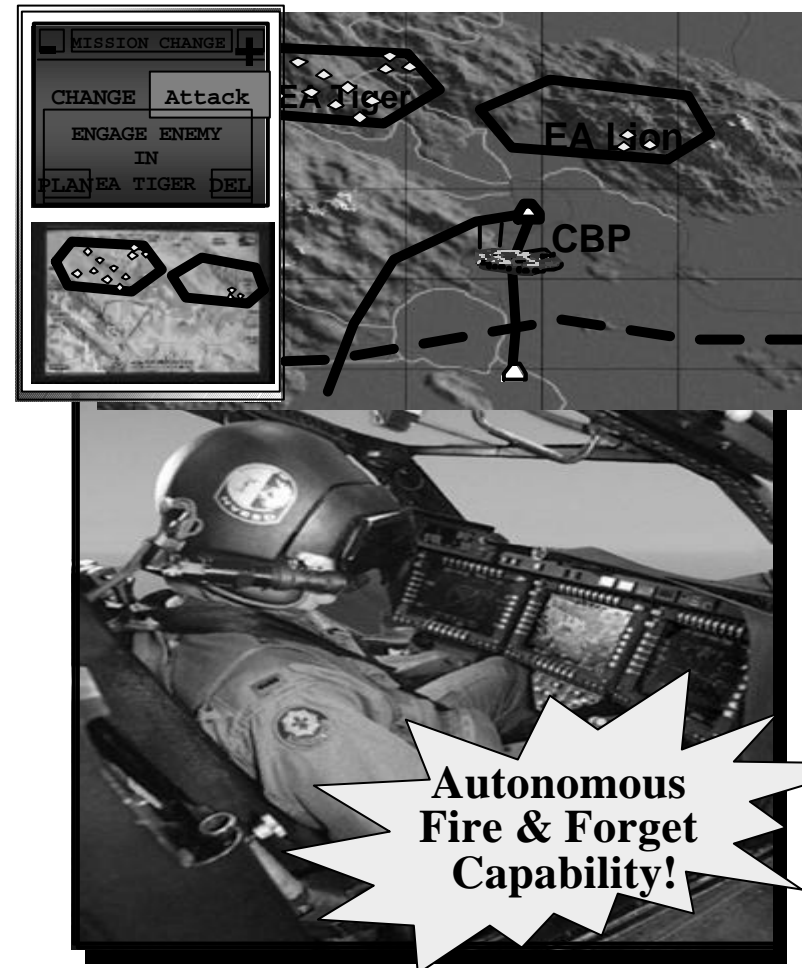
- Heavy force lethality (LOS, BLOS, & NLOS with high stowed kills) against spectrum of threat
- Reduced logistics footprint – through common armament module and single cartridge envelope

One Lightweight Armament System Capable of Dominating the Red Zone and Beyond

Simultaneous Decision Aided Engagement



Conventional (Commander/Gunner)
One-on-One Target Acquisition
and Engagement



Longbow Apache-like Decision Aids,
Target Acquisition & Fire Control



Objective Crew Served Weapon

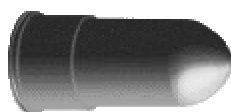
Revolution in Small Arms Performance

Evolutionary

Weight = Weapon & Ammo



Mk19 Grenade MG - 208.5 lbs



40mm HE (M433)



M2 50 cal. HMG - 171 lbs



.50 cal KE
Ball, Tracer & SLAP



M240 MG - 64.8 lbs



7.62mm KE
Ball & Tracer



Current Capability

Max Effective Range:

- Mark 19 Grenade MG 1500 meters
- M2 50 cal HMG 1500 meters
- M240 MMG 1500 meters

Max Effective Range (25 mm):

- Defilade Target to 1,000 m
- Area Targets to 2,000 (8 men 10 m x 50 m)
- Airburst, Point Detonation (PD) & Self Destruct Capabilities
- Defeats Targets in Defilade
- Armor Piercing Round 2" HHA/RHA

Future Capability

Revolutionary!



OCSW & Ammo - 64 lbs



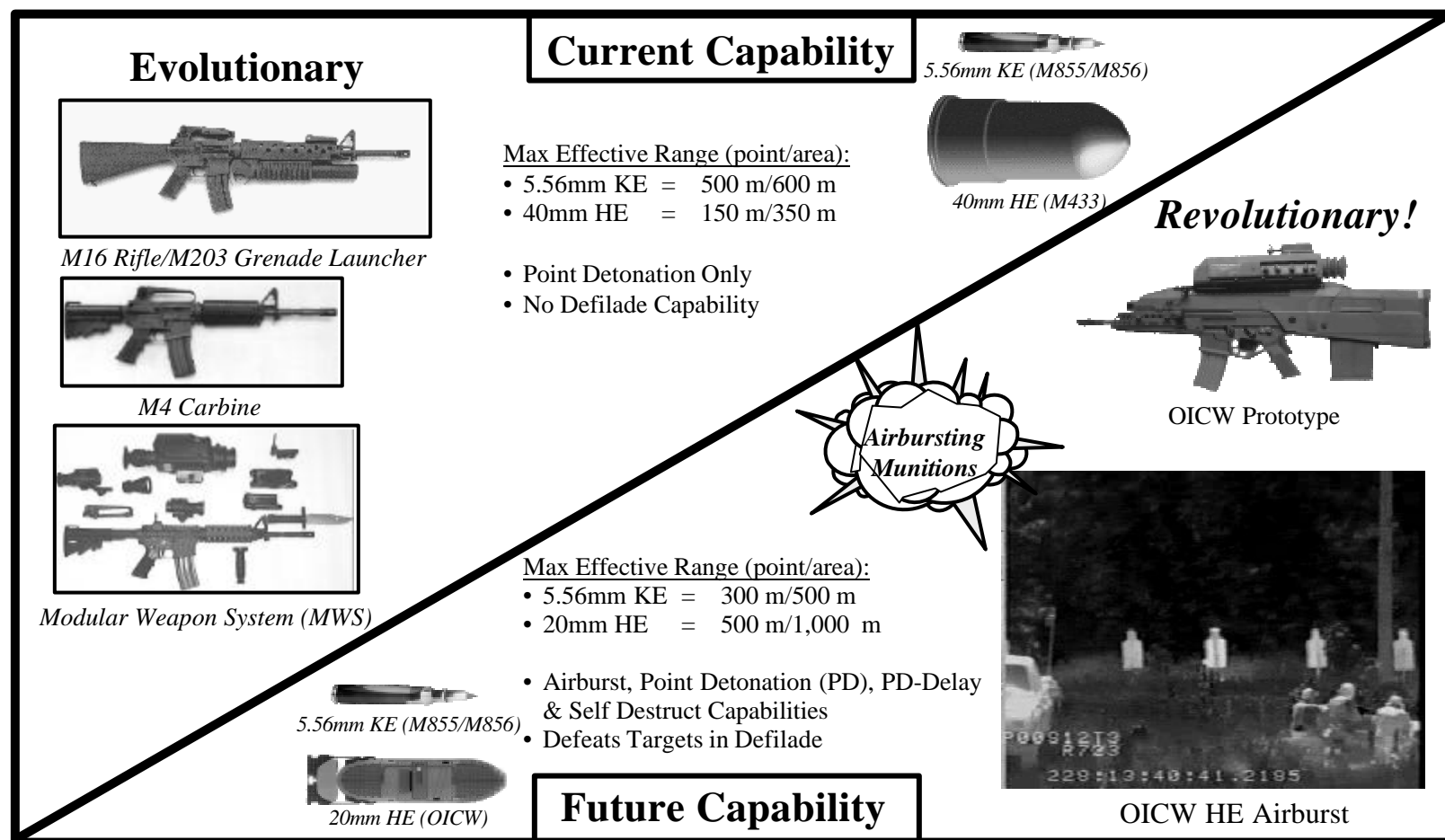
OCSW Airburst

Committed to Excellence



Objective Individual Combat Weapon

Revolution in Small Arms Performance





CHANGE IN AMMUNITION TECHNOLOGY



TACOM - ARDEC

	CURRENT INVENTORY	OBJECTIVE FORCE
FUZE	Mechanical & Electronic Fuze Setting Single Point Initiation	•MEMS Safe Arm •Multi Point Initiation
GUIDANCE	None	•GPS and Dynamic Retargeting
EXPLOSIVES	LX-14	•30% performance increase •10% less sensitivity
PROPELLANTS	JA2	•High energy 1300 j/g •Low flame temp/less erosivity •Reduced vulnerability •ETC ignition



CHANGE IN AMMUNITION TECHNOLOGY (Cont.)



TACOM - ARDEC

CURRENT INVENTORY

OBJECTIVE FORCE

SHAPED CHARGE

Javelin, Tow, Hellfire

- 50% shorter compact SC whd
- Multiple effects whd
- Defeat armor/bunker masonry

EFP

Predator TOW 2B
Hornet FSW (AF)
SOF-SDK Demo Kit

- 50% improvement in armor penetration w/collinear EFP whd



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CHANGE IN COST AND QUANTITY (FY00)



TACOM - ARDEC

		<u>UNIT COST</u>	<u>ANNUAL QUANTITY</u>	<u>ANNUAL PA FUNDING</u>
M1 TANK				
• COMBAT	M829A2*	\$4009	7000	Total \$31.40M
	M830A1*	\$4075	2000	Total \$17.20M
• TRAINING	M865	\$469	177,671	Total \$85.43M
	M831A1	\$490	72,815	Total \$37.37M
155 ARTY				
• COMBAT	M483A1	\$1,290	(FY92) 70,000	Total \$32.8M
	M864	\$1,207	(FY93) 225,000	
• TRAINING		\$212	157,512	
FCS				
• MP-ERM		\$35K	5000	\$175M
• SMART CARGO(DPICM)		\$20K	8000	\$160M

* Funded as Congressional Add-On (to Multi-year contract)



CHANGE IN COST AND QUANTITY (FY00)



TACOM - ARDEC

	<u>UNIT COST</u>	<u>ANNUAL QUANTITY</u>	<u>ANNUAL PA FUNDING</u>
M16A2/M249 SAW			
•M855 Ball/M856 Tracer	\$0.34	294M	\$97M
M60/M240			
•M80 Ball/M62 Tracer	\$0.46	26M	\$11.9M
OICW	\$34	1.0M?	\$34M?
OCSW	\$29	3.0M?	\$87M?



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CRUSADER INTEGRATED TRAINING



TACOM - ARDEC





INDUSTRIAL BASE IMPLICATIONS



- **Legacy Munitions will be required for some time**
 - **increasingly less relevant over time.**
- **Future Munitions will be different**
 - **advanced materials and structures**
 - **integrated guidance and control**
 - **advanced sensors/payloads**
 - **different manufacturing processes**
 - **continuous upgrades (measures/countermeasures)**



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INDUSTRIAL BASE IMPLICATIONS



TACOM - ARDEC

- **Future Munitions will be smart and precise -- BUT**
 - **must also be affordable and cost effective**
 - **higher unit costs, lower quantity**
 - **lower life cycle costs**
 - **smaller logistics footprint**
- **Greater reliance on Modeling & Simulation**
 - **design**
 - **development**
 - **test & evaluation**
 - **training**



INDUSTRIAL BASE IMPLICATIONS



TACOM - ARDEC

- Rate of Army Transformation demands that we change the munitions acquisition culture
 - requirements development, design, development, procurement/contracting, manufacturing, test & evaluation, and ILS approach for munitions.
- Need to accelerate the industrial and support base transformation to meet Army Transformation goals

**ARMY TRANSFORMATION REQUIRES
INDUSTRIAL BASE TRANSFORMATION**